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16 1994

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**COMMENTS AND RECOMMENDATIONS TO THE
STATE WATER RESOURCES CONTROL BOARD REGARDING
REVIEW OF STANDARDS FOR THE SAN FRANCISCO BAY/
SACRAMENTO-SAN JOAQUIN DELTA ESTUARY**

MAY 16, 1994 Workshop

**Presented by Cynthia L. Koehler
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SUMMARY RESPONSE TO KEY ISSUES

1. What are the principal ESA issues the SWRCB should consider during this review?

Most fundamentally, the Board should address endangered and threatened species issues from an ecosystem perspective rather than an exclusively species-by-species approach. The State's past failure to set, and then enforce, meaningful water quality standards for the Bay-delta estuary is largely responsible for the extraordinary declines native fishes have experienced in recent decades, and for the rise in the number of species eligible for listing under state and federal Endangered Species Acts.

Dr. Peter Moyle testified before this Board two years ago that between 1980 and 1992 the estuary experienced a 90% decline in total fish abundance, and that declines have been particularly severe in spring-spawning species such as delta and longfin smelts. (WRINT-NHI-9 at 4.) Populations improved somewhat in 1993 due to the wet conditions, which demonstrates the need for higher outflows. The Board also was informed during its 1992 proceedings that in addition to winter run Chinook salmon, which was already formally listed as endangered under both federal and state law, various other fishes were headed for listing as well, including delta smelt, longfin smelt, spring-run Chinook salmon, Sacramento splittail and green sturgeon.

During the ensuing two years of State inaction, delta smelt has been listed under the federal act and Sacramento splittail has been proposed for listing, with final listing likely by the

end of this year. In a study prepared last year for the California Department of Fish and Game, Professor Moyle demonstrated that spring run Chinook salmon and longfin smelt qualify as endangered, and that green sturgeon and various other fishes qualify as threatened. Dr. Moyle's study listed Late-fall Chinook, and other fishes which rely upon the Bay-delta estuary as species of "special concern." (Moyle, P.B., R.M. Yoshiyama, J.E. Williams and E.D. Wikramanayake 1994. Fish Species of Special Concern In California. University of California, Davis.)

Thus, in whatever standards it now seeks to develop, the Board must look beyond those species that are already listed, to species that have experienced severe declines and may be eligible for listing now or in the near future. Our experience with winter run Chinook and delta smelt have demonstrated amply that ignoring critical species declines until a crisis point is reached calling for extreme solutions under endangered species statutes to stave off extinction is fundamentally flawed policy.

Therefore, in this most recent effort by the Board to establish water quality standards for the Bay-delta estuary, NHI recommends that the Board treat the conditions set forth in the biological opinions for winter run Chinook and delta smelt as beginning points only. These opinions have been criticized as insufficient to attain the mandated goal of avoiding jeopardy to these fishes or to ensure species recovery. Beyond these opinions, the Board should develop standards which take into account the full spectrum of habitat issues that bear on the viability of fish and other aquatic species in the Bay-delta estuary. At a minimum the Board should address the specific habitat requirements of the following fishes.

Sacramento Splittail. The splittail is now confined to the Sacramento-San Joaquin estuary. It shows a strong correlation with delta outflows and its numbers have declined dramatically in recent years. The Natural Heritage Institute filed a petition for listing the splittail with the U.S. Fish and Wildlife Service ("FWS") in November 1992. On January 6, 1994, FWS proposed threatened status for this species under the federal ESA, citing its 62% decline over the last 15 years. FWS identified large freshwater exports from the delta, loss of habitat, and chemical pollution as among the primary factors leading to this decline. (59 Fed. Reg. 862.)

Successful splittail reproduction is dependent on high delta outflows preceding, during and following spawning, which occurs during the spring months. Studies have established that year class success is associated with winter runoff sufficiently high to flood the peripheral areas of the delta. Therefore, measures are necessary to limit diversions from the delta, and to assure adequate inflow from the lower reaches of the rivers, during the spring spawning months.

Survival of the splittail depends upon the protection of the habitat it needs at all stages of its life. The geographic extent of this critical habitat includes all of the delta, and much of the Sacramento and San Joaquin Rivers, as well as Suisun Bay. The physical and biological conditions that are related to adequate delta outflows are critical. Thus, habitat requirements for the splittail include the following factors:

1. Adequate freshwater and flooded vegetation in spawning areas during March and April to ensure successful spawning.
2. Late spring (April-June) outflows of 12,000 to 14,000 cfs to keep juvenile and larval splittail out of the Delta, to prevent entrainment and exposure to toxic materials.

A copy of NHI's petition for listing is attached for your reference.

Longfin Smelt. Longfin smelt populations have been in sharp decline since 1983. The factor most strongly associated with this decline has been the increase in water diverted by the CVP and SWP during the winter and spring months when the smelt are spawning. As Professor Moyle has previously testified before this Board, continuation of this pattern will almost certainly extirpate this species in the Bay-delta estuary. The Natural Heritage Institute filed a petition for listing the splittail with the FWS in 1992. FWS determined that "strong relationships between outflow and longfin smelt abundance indicate that outflows less than 3,400 cfs result in productive failure for longfin smelt...Because of its 2-year life span, such flows for more than 2 or 3 consecutive years could push this species toward extinction." (59 Fed Reg 69.) Despite this finding and its acknowledgment that longfin smelt have declined in the estuary by 90% since 1984, and by 50% annually since 1987, FWS nevertheless declined to propose longfin smelt for listing, but included it in "category 2." (59 Fed. Reg. 869.)

However, FWS based this decision largely on its conclusion that the Sacramento-San Joaquin estuary population segment does not seem to be biologically significant or reproductively isolated. This conclusion seems to be flawed based on available scientific research. FWS relied primarily on "unverified reports" of offshore collections of longfin smelt, from which FWS inferred the possibility of migration between estuaries. These reports, however, are 25 years old. All recent data indicate that longfin are extinct in Humboldt Bay, the nearest location to the Bay-delta estuary where longfin once existed. NHI will shortly be submitting a request to FWS that it review its "1-year finding" with regard to longfin smelt based on the considerable evidence indicating that the Sacramento-San Joaquin delta estuary population segment is indeed reproductively isolated and biologically significant.

Thus, for the Board's purposes in determining water quality standards, the biological imperatives for maintaining longfin smelt must be addressed. There is a strong positive correlation between winter and spring delta outflow and longfin abundance the following year, as well as a strong correlation between delta outflow and juvenile survival in the estuary. The reason for this is that flows increase the rate of transport into the rearing habitat in Suisun and San Pablo Bays, and reduce the probability of the larvae being retained in the delta, where they are exposed to a greater likelihood of entrainment.

Longfin smelt will persist in the Sacramento-San Joaquin estuary only if adequate standards for delta outflows are set. Ideally, there should be no CVP or SWP diversions while longfin smelt are spawning, February through April. At a minimum, spring outflows in dry and critical years should be 12,000 to 14,000 cfs from January through March before diversions are permitted. Thus, habitat requirements for the longfin smelt include the following factors:

1. Net positive flows down the Sacramento and San Joaquin Rivers when adult smelt are moving up for spawning (November through February).
2. Net positive flows down the two rivers when larval smelt are present (mainly February through April).
3. Late spring (April-June) outflows of 12,000 to 14,000 cfs to keep juvenile and larval smelt out of the delta, and to prevent entrainment and exposure to toxic materials.

See NHI Petition for Listing, attached. Although some of the actions which have been recommended for delta smelt should be also beneficial to longfin smelt, these two species differ in distribution within the estuary and in spawning times. This means that additional protections are necessary for longfin smelt.

Spring Run Chinook Salmon. As indicated in our earlier comments for the April 26 Workshop, spring run Chinook salmon are eligible for listing under federal and state endangered species statutes. Less than 200 adult fish returned to spawn in 1993. A consensus has emerged among the State's preeminent fisheries biologists that problems in the delta are primarily responsible for the severe decline in spring run stocks over the last decade. As it considers actions geared specifically toward endangered species, the Board should attend as well to measures necessary to restore spring run stocks.

NHI has deferred filing a petition for listing spring run Chinook until now in order to allow a coalition of fishermen, local landowners and regional agency officials and the

conservation community to work toward innovative and volunteer-based solutions to spring run issues in the tributaries. Since it has become clear that the delta is the major obstacle to the recovery of this species, it is imperative that a hydrodynamic standard be established to alleviate the adverse impacts of delta pumping on this species. As previously indicated, if the State fails to provide adequate protection for the spring run through its regulatory authority, we will have no choice but to proceed with the filing of the ESA petition for spring run Chinook.

2. What are the effects of diversions throughout the Bay-Delta Estuary on beneficial uses?

NHI and others have repeatedly addressed this issue in Board proceedings over the last seven years. The Board is directed to the voluminous evidence previously submitted on this question. (See, e.g., WRINT-NHI-9; WRINT-NHI-10. See also, Moyle 1994, cited above.)

3. What methods should the SWRCB use to analyze the water supply and environmental effects of alternative standards?

DWRSIM has been harshly criticized by various reputable parties in prior Bay-delta, and other, proceedings. NHI recommends that the Board consider in particular the thoughtful comments of the Contra Costa Water District and the Environmental Defense Fund in this regard.